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TRANSMITTAL FORM

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Total Number of Pages in This Submission

7

Application Number

10/757,958

Filing Date

January 13, 2004

First Named Inventor

OGASAWARA, Hiroshi

Art Unit

2122

Examiner Name

Unassigned

Attorney Docket Number

16869K-103400US

ENCLOSURES (Check all that apply)

☐

Fee Transmittal Form

☐

Fee Attached

☐

Amendment/Reply

☐

After Final

☐

Affidavits/declaration(s)

☐

Extension of Time Request

☐

Express Abandonment Request

☐

Information Disclosure Statement

☐

Certified Copy of Priority Document(s)

☐

Reply to Missing Parts/ Incomplete Application

☐

Reply to Missing Parts under 37 CFR 1.52 or 1.53

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Drawing(s)

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Licensing-related Papers

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Resubmission of Petition to Make

Special

☐

Petition to Convert to a Provisional Application

☐

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Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)

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Copies of Express Mail Label, Returned Receipt Postcard, Transmittal Form and Fee Transmittal, *Petition*

Remarks

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name

Townsend and Townsend and Crew LLP

Signature

Printed name

Chun-Pok Leung

Date

February 1, 2005

Reg. No.

41,405

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Joy Salvador

Date

February 1, 2005



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

HIROSHI OGASAWARA et al.

Application No.: 10/757,958

Filed: January 13, 2004

For: METHOD OF INSTALLING
SOFTWARE ON STORAGE
DEVICE CONTROLLING
APPARATUS, METHOD OF
CONTROLLING STORAGE
DEVICE CONTROLLING
APPARATUS, AND STORAGE
DEVICE CONTROLLING
APPARATUS

Customer No.: 20350

Examiner: Unassigned

Technology Center/Art Unit: 2122

Confirmation No.: 5071

**RESUBMISSION OF PETITION TO
MAKE SPECIAL FOR NEW
APPLICATION UNDER M.P.E.P.
§ 708.02, VIII & 37 C.F.R. § 1.102(d)**

MAIL STOP PETITION

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450


Sir:

The enclosed Petition to Make Special was filed on September 13, 2004. Also enclosed is a copy of the Express Mail label stamped September 13, 2004, the return postcard stamped September 13, 2004, the Transmittal Form, and the Fee Transmittal.

The Petition has not been entered according to Patent Application Information Retrieval (PAIR).

In view of the foregoing, Applicants respectfully request entry of the Petition and issuance of a first Office Action at an early date.

Respectfully submitted,


Chun-Pok Leung
Reg. No. 41,405

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, 8th Floor
San Francisco, California 94111-3834
Tel: 650-326-2400; Fax: 415-576-0300
Attachments

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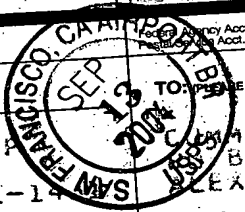
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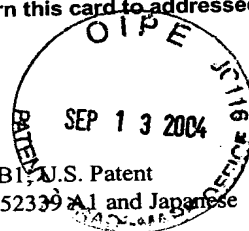
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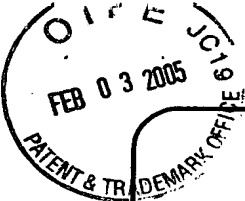
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Application No.:	10/757,958	Docket No.:	16869K-103400US
Confirmation No.:	5071	Attorney:	RL:jbs
Due Date:	N/A		
Date Mailed:	September 13, 2004		

Please stamp the date of receipt of the following documents and return this card to addressee.

- Transmittal Form
- Fee Transmittal (in duplicate)
- Preliminary Amendment (7 pages)
- Petition to Make Special (8 pages)
- Six (6) cited references: (U.S. Patent Nos. 5,640,596/6,549,988 B1, U.S. Patent Publication Nos. 2003/0200487 A1, 2003/0233502 A1, 2002/0152339 A1 and Japanese Patent Publication No. 2002-351703
- Return Receipt Postcard



**TRANSMITTAL
FORM**

(to be used for all correspondence after initial filing)

Application Number	10/757,958
Filing Date	January 13, 2004
First Named Inventor	OGASAWARA, Hiroshi
Art Unit	2122
Examiner Name	Unassigned
Attorney Docket Number	16869K-103400US

Total Number of Pages in This Submission

18

ENCLOSURES (Check all that apply)

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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Townsend and Townsend and Crew LLP Chun-Pok Leung	Reg. No. 41,405
Signature		
Date	September 13, 2004	

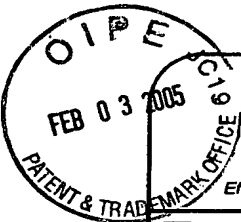
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**FEE TRANSMITTAL
for FY 2004**

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27**TOTAL AMOUNT OF PAYMENT (\$)** 130.00**Complete if Known**

Application Number	10/757,958
Filing Date	January 13, 2004
First Named Inventor	OGASAWARA, Hiroshi
Examiner Name	Unassigned
Art Unit	2122
Attorney Docket No.	16869K-103400US

METHOD OF PAYMENT (check all that apply)☐ Check ☐ Credit Card ☐ Money Order ☐ Other ☐ None☒ Deposit Account:Deposit
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Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1)

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2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims		Extra Claims		Fee from below		Fee Paid
	--	=		X		
Independent Claims		--		X		
Multiple Dependent				X		

Large Entity		Small Entity		Fee Description
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2)

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FEE CALCULATION (continued)**3. ADDITIONAL FEES**

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	130
1807	50	1807	50	Petitions related to provisional applications	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

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*Reduced by Basic Filing Fee Paid **SUBTOTAL (3)**

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SUBMITTED BY

Name (Print/Type)	Chun-Pok Leung	Registration No. (Attorney/Agent)	41,405	Telephone	650-326-2400
Signature				Date	September 13, 2004

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PATENT
Attorney Docket No.: 16869K-103400US
Client Ref. No.: 640/SM/mt

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

HIROSHI OGASAWARA et al.

Application No.: 10/757,958

Filed: January 13, 2004

For: METHOD OF INSTALLING
SOFTWARE ON STORAGE
DEVICE CONTROLLING
APPARATUS, METHOD OF
CONTROLLING STORAGE
DEVICE CONTROLLING
APPARATUS, AND STORAGE
DEVICE CONTROLLING
APPARATUS

Customer No.: 20350

Examiner: Unassigned

Technology Center/Art Unit: 2122

Confirmation No.: 5071

**PETITION TO MAKE SPECIAL FOR
NEW APPLICATION UNDER M.P.E.P.
§ 708.02, VIII & 37 C.F.R. § 1.102(d)**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is a petition to make special the above-identified application under MPEP § 708.02, VIII & 37 C.F.R. § 1.102(d). The application has not received any examination by an Examiner.

(a) The Commissioner is authorized to charge the petition fee of \$130 under 37 C.F.R. § 1.17(i) and any other fees associated with this paper to Deposit Account 20-1430.

(b) All the claims are believed to be directed to a single invention. If the Office determines that all the claims presented are not obviously directed to a single invention, then Applicants will make an election without traverse as a prerequisite to the grant of special status.

(c) Pre-examination searches were made of U.S. issued patents, including a classification search, a computer database search, and a keyword search. The searches were performed on or around July 13, 2004, and were conducted by a professional search firm, Kramer & Amado, P.C. The classification search covered Classes 710 (subclasses 20, 21, 25 and 35) and 711 (subclasses 141, 143, and 165). The computer database search was conducted on the USPTO systems EAST and WEST. The keyword search was conducted in Classes 707 (subclasses 1 and 200), and 711 (subclasses 112, 113, 114, and 162). The inventors further provided two references considered most closely related to the subject matter of the present application (see references #5 and #6 below), which were cited in the Information Disclosure Statement filed with the application on January 13, 2004.

(d) The following references, copies of which are attached herewith, are deemed most closely related to the subject matter encompassed by the claims:

- (1) U.S. Patent No. 5,640,596;
- (2) U.S. Patent No. 6,549,988 B1;
- (3) U.S. Patent Publication No. 2003/0200487 A1;
- (4) U.S. Patent Publication No. 2003/0233502 A1;
- (5) U.S. Patent Publication No. 2002/0152339 A1; and
- (6) Japanese Patent Publication No. 2002-351703.

(e) Set forth below is a detailed discussion of references which points out with particularity how the claimed subject matter is distinguishable over the references.

A. Claimed Embodiments of the Present Invention

The claimed embodiments relate to a method of installing software on a storage device controlling apparatus

Independent claim 1 recites a method of installing software on a storage device controlling apparatus which includes at least one channel controller having a circuit board on which are formed a file access processing section receiving requests to input and output data in files as units from an information processing apparatus via a first network and an I/O processor outputting I/O requests corresponding to the requests to input and output data to a storage device; at least one disk controller executing input and output of data into and from the storage device in response to the I/O requests sent from the I/O processor; and a second network coupling the channel controller and the disk controller so as to be able to communicate with each other. The method comprises writing software for enabling the file access processing section to function, the software being written into the storage device by communicating with the channel controller via the second network.

Independent claim 2 recites a method of installing software on a storage device controlling apparatus which includes at least one channel controller having a circuit board on which are formed a file access processing section receiving requests to input and output data in files as units from an information processing apparatus via a first network and an I/O processor outputting I/O requests corresponding to the requests to input and output data to a storage device I/O; at least one disk controller executing input and output of data into and from the storage device in response to the I/O requests sent from the I/O processor; and a second network coupling the channel controller and the disk controller so as to be able to communicate with each other. The method comprises writing a piece of firmware into each of nonvolatile memories provided for the channel controller and the disk controller via the second network.

As discussed in the specification at page 2, lines 9-26, a conventional Network Attached Storage (NAS) has been achieved by connecting information processing apparatuses having TCP/IP communication and file system functions to a storage system without TCP/IP communication and file system functions. To make the storage system work

as a NAS, it has been required to install a piece of software on each of the storage system without the TCP/IP communication and file system functions, and the information processing apparatuses having the TCP-IP communication and file system functions, and further to perform various settings to link those pieces of software.

Embodiments of the present invention install firmware or software to make the file access processing section work in the storage device. Consequently, the storage system can provide the information processing apparatus with a function to work as a NAS. Page 4, lines 14-17. In a specific embodiment as shown in Fig. 1, a storage system 600 includes storage devices 300 and a storage device controlling apparatus 100 which has channel controllers (CHNs) 110 and disk controllers 140. In the embodiment shown in Fig. 12, the channel controllers 110 each include a network interface section 111 for processing file access from the information processing apparatus 2 via a first network which may be a LAN 400, and an input-output controller 114 for processing I/O. Page 36, line 19. As seen in Fig. 1, a second network which is an internal LAN 151 couples the channel controllers 110 and the disk controllers 140. Page 36, line 24.

One way to make the storage system 600 function as a NAS is to install an OS 701 for execution by CHNs 110, micro-programs (firmware) for execution by the CHNs 110 and the disk controllers 140, application programs such as the volume manager 707, the file system program 703, and the NAS manager 706 for execution by the CHNs 110, and a remote copy control program 750, a duplication management program 760, and the like for execution by the disk controllers 140 as necessary. Page 35, lines 2-10. Micro-programs 770, a loader 771, an installer 772, and an OS 773 are stored in the memory 162 are stored to be installed. One of the micro-programs 770 is written in NVRAMs 115 of CHNs 110, and the other is written into NVRAMs 144 of the disk controllers 140. The former is a program for controlling I/O processors 119 of CHNs 110. The latter is a program for controlling CPUs 142 of the disk controllers 140. The loader 771 and the installer 772 are programs used for CHNs 110 to read in the OS 773 stored in the managing terminal 160. The OS 773 is installed in a system LU provided in the storage device 330 for each CHN 110. Page 36, line 24 to page 37, line 8; and Fig. 15. The details of a specific embodiment of the installing procedure is illustrated in Fig. 18 and described at page 38, line 25 to page 41, line 20. By

the specific installing method, firmware and the OS 773 can be installed smoothly in the procedure.

One benefit that may be derived is that the channel controllers in the storage system can be set as NAS channel controllers, so that the storage system can function as a NAS. Page 41, lines 21-23.

B. Discussion of the References

None of the following references disclose or suggest a storage device controlling apparatus which includes a first network that couples an information processing apparatus with at least one channel controller, and a second network that couples the at least one channel controller with at least one disk controller to allow them to communicate with each other; and writing software for enabling the file access processing section to function, wherein the software is written into the storage device by communicating with the channel controller via the second network. Nor do the references teach writing a piece of firmware into each of nonvolatile memories provided for the channel controller and the disk controller via the second network.

1. U.S. Patent No. 5,640,596

This reference discloses a data input/output control method. The I/O controller and devices are connected by a single channel path or a plurality of channel paths. An I/O request 130 issued from a higher-rank apparatus (not shown) is accepted by the I/O processor 101 (step 204). Then, a judgment is made by the content of the I/O request 130 to determine a channel path through which data transfer is to be performed (step 205). This judgment is performed by searching the channel path control table 103. If there is a waiting I/O request which uses the channel path, which is the usual case, a plurality of I/O requests which use the channel path among all the I/O requests registered in the I/O request queues 122 are picked up (step 211) and channel programs and write data corresponding to the respective picked up I/O requests are read from the main storage 121 and are collectively transferred to the disk controller 131 (step 212). A plurality of I/O requests which use the same channel path are collectively picked up from the I/O request queues 122 and transferred to the disk controller 131. The disc controller controls execution of each command included

in each transferred channel program. An overhead for reading a channel program and an overhead for exchange of commands between the input-output processor and the disc controller can be reduced so that high throughput can be provided. See column 5, line 49 to column 6, line 18.

2. U.S. Patent No. 6,549,988 B1

This reference discloses a data storage system comprising a network of PCs and a method of using the same. The primary object is to provide a high performance, scalable, data storage system using off-the-shelf standard components. The preferred embodiment comprises a network of PCs including an I/O channel adapter and network adapter and method for managing distributed cache memory stored in the plurality of PCs interconnected by the network. Another object is to provide a distributed cache that supports arbitrary reads and writes arriving via I/O channels or network links, as well as a method for sharing data between two or more heterogeneous host computers using different data formats and connected to a data storage system. The method uses a translation module that inputs a record in a format compatible with the first host and stores the translated record in a data format compatible with the second host. Sharing of data in one format and having a translation module permitting representations in different formats in cache memory provides a means for improving performance of I/O requests and saving disk storage space. Column 3, lines 34-56. Figs. 1-2 illustrate data storage system configurations, and Fig. 3 shows a PC data storage system.

3. U.S. Patent Publication No. 2003/0200487 A1

This reference discloses a storage apparatus which includes saving setting information of the storage apparatuses, transmitting the saved setting information to the storage apparatuses, receiving from the storage apparatuses results of processing for the setting information, retaining the setting information for which the processing results are in error, and executing processing for the setting information with the error. A program for controlling storage apparatuses includes a setting information saving function, a transmitting function, a receiving function, an error setting information retaining function, and an error processing executing function. The storage control terminal 10 is constituted of a computer

system. Installing and executing storage control software on a client 11 will allow it to function as a storage control terminal. See [0049]-[0058].

4. U.S. Patent Publication No. 2003/0233502 A1

This reference discloses a storage control system that has controllers mutually connected by an internal communication path. The storage control system 10 comprises: an internal communication path 20 which is for carrying out data input/output of data, alike, for example, a control bus (or a system bus) formed on a circuit board and connecting a CPU and a memory; a plurality of controllers 100, 110 connected to the internal communication path 20; a storage apparatus 120; and power units 30, 31 structured in a redundant manner. A service processor 40 connected to the controllers 100, 110 and the storage apparatus 120 carries out, for example, operation control of the controllers 100, 110 and the storage apparatus 120, various settings thereto, and/or monitoring of their operational states. When storage control system 10 receives a data input/output request inputted from an external device such as a host computer (not shown) via the external communication path 50, the processors 101 and/or 111 send, to the control memory 121 via the internal communication path 20, a data input/output command including an instruction command corresponding to the received request and data. The control memory 121 receives and stores this command. Having received the interrupt request, the device interface 123 writes-in, to the storage resource 122, the above-mentioned write data stored in the cache memory 124 at an appropriate timing. See [0054] and [0060]-[0062].

5. U.S. Patent Publication No. 2002/0152339 A1

This reference relates to a direct access storage system with a combined block interface and file interface access. It provides a storage system with direct access to storage devices that can be shared between a block interface and a file interface. As Fig. 1 shows, the storage controller 14 includes four types of interface adaptors: a SCSI interface adaptors 26, a NFS interface adaptor 28, a CIFS interface adaptor 30, and a HTTP interface adaptor 32. Each is configured to handle a specific protocol. Accordingly, the SCSI interface adaptor 26 is configured to receive, from the host system 12, SCSI or block system protocol type input/output requests. As is conventional, a block system protocol request will include a

logical unit number, a block identification (ID) within the specified logical unit, and data link. File system protocol requests, depending upon type, are received by the NFS, CIFS, and/or HTTP interface adaptors 28, 30, and 32. File system protocol requests will typically utilize an upper layer protocol of TCP/IP that includes an identification of a specific file name rather than a logical unit number. See [0021].

6. Japanese Patent Publication No. 2002-351703

This reference discloses a file data backup method and file data copying method of a storage device. The storage device utilizes the drive capacity in the coexisting environment of block form data and of file form data. A block data input/output processing part 10-a converts block data and an address from a fiber channel port 50 to a data format inside of the storage device 1. A file data input/output processing part 10-b converts file data and an address from an Ethernet (registered mark) to the data format of the file system 20. The file system 20 indexes the address of a logical volume 35-b from the address of the system 20 and converts the file data into block data. A logical volume management part 30 indexes the address of a logical volume 35-a for writing the block data from the address outputted by a processing part 10-a, converts this address or the address from the file system 20 to a physical address and writes/reads data to a drive.

(f) In view of this petition, the Examiner is respectfully requested to issue a first Office Action at an early date.

Respectfully submitted,



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